

VEGETABLE GARDENING

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TEXAS AGRICULTURAL EXTENSION SERVICE
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Vegetable Gardening

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PLANNING THE GARDEN

Selection of Site

The first step in planning a garden is to select the best possible location.

In selecting a garden plot to produce good vegetables, the following points should be considered:

1. **CONVENIENCE.** The garden site should be located near the house so that it will be easier to work and harvest vegetable crops. A garden needs attention almost daily; close supervision is more likely if the site is near-at-hand and easy to reach.

2. **GOOD SOIL.** This is a factor that the home gardener can not control completely. In most cases, it is a matter of choosing the most suitable soil available on the home grounds. The best all-purpose garden soil is a rich, deep, sandy or sandy loam with at least 10 to 12 inches of top soil underlaid by a well-drained, porous clay subsoil. It is not always possible to have this ideal soil since soil types vary a great deal over Texas. However, almost any soil type can be used if heavy applications of organic matter, such as barnyard manure or compost, are made and if the soil is prepared properly and commercial fertilizer is applied correctly.

3. **WATER SUPPLY.** An adequate supply of good water for supplemental irrigation should be nearby. All vegetable crops need to make continuous and rapid growth in order to reach their peak of quality; therefore, a source of water for irrigation is extremely important in most sections of Texas.

4. **LAY OF THE LAND.** The garden site should have a slight slope to insure surface water drainage and to allow sufficient air drainage to prevent a possible pocketing of frost. A steep slope makes cultivation and irrigation difficult and often leads to severe washing by heavy rains.

5. **ADEQUATE LIGHT.** Most vegetable crops require much sunshine for the best growth. Locations

that are shaded by trees, shrubs, walls or buildings for most of the day should be avoided. Leafy crops such as leaf lettuce, mustard, collards, spinach, chard and kale tolerate more shade than most of the fruit-bearing crops such as tomatoes, eggplants, squash, cantaloupes and peppers.

6. **COMPETITION.** Competing vegetation in the form of large shade trees and ornamental shrubs can seriously reduce the yield of a home garden. If the root systems of these plants are growing in the garden area, they will take up large quantities of nutrient elements and moisture needed by the vegetable crops for satisfactory growth. The lateral spread of the roots of a large shade tree often will extend two or three times the distance of the spread of the branches.

Making Garden Plans

For even the experienced gardener, a plan on paper is helpful. By choosing the desired kinds of vegetables before planting time, seed can be purchased; if certain varieties are not available locally, orders can be placed and the seed will arrive in time for planting. There is no perfect plan that fits all gardens. It is best to group vegetables according to the proper time for planting. In general, vegetables are divided into three groups—early, midseason and late. The early group, such as English peas, carrots, spinach, beets, cabbage and onions, should be planted in one section of the garden; midseason vegetables should be planted in another part; and the late vegetables in still another part. If possible, the low-growing types of vegetables should be planted so that they are not shaded by the tall ones. The garden fence often may be used to advantage in providing a trellis for pole beans or other vegetables of this type. Perennials should be planted on one side of the garden away from annual plants.



A wheel hoe is a valuable aid to the home gardener in cultivating the garden vegetables.

A garden plan on paper helps the gardener avoid repeated plantings of the same vegetables in the same part of the garden. Where vegetables such as tomatoes, squash and potatoes are planted year after year on the same spot, the soil becomes disease infected, and heavy losses of plants may result.

Choosing Tools and Equipment

Every gardener needs a hoe, rake and spading fork or round-pointed shovel. For large gardens a good wheel hoe or hand cultivator multiplies the gardener's efficiency many times. Sharp, well-kept tools make for quick and efficient work. When water connections are available, a garden hose and sprinkler are valuable.

SOIL PREPARATION AND IMPROVEMENT

Preparing the Soil

The location, type of soil, drainage, physical condition, season of year, amount of rainfall and other factors alter the procedure in preparing garden sites.

An old garden site of deep, open, sandy soil needs only light, shallow cultivation. Here, late winter or early spring preparation is sufficient to insure good production. However, new sites on poorly drained spots, on tight, shallow soils or on rocky or sodded land should be cleaned off, drained and broken thoroughly in the fall or early winter.

After the sites have been prepared, the soil should be broken to a depth of 8 to 10 inches. In breaking plots, cut up crop residue and weeds finely and turn

Using Hotbeds or Coldframes

To grow an early garden, begin crops such as lettuce, cabbage, cauliflower, tomatoes, eggplant and peppers in a protected place, such as a hotbed. Later transplant them to the open garden. At least 18 inches of manure should be used and another inch added for every week beyond 4 weeks that there is danger of frost. Coldframes are used for hardening the plants. They are built like hotbeds except that no manure is used. The beds are heated by the sun during the day and this warmth is held in by covering during the night.

For a very early start, seed may be planted in a shallow box in the house or hotbed. When the first two true leaves develop and the plants begin to crowd, they should be transplanted to a coldframe and spaced 4 inches each way. The small plants may be set in a plant box 18" x 30" x 4" which holds 28 plants. Or they may be placed in tin cans or pots until danger of frost is past, when they will be planted in the garden. Plants should be "hardened off" before being moved to the field to withstand adverse weather conditions. This is done by exposing them gradually in hotbeds or coldframes to day temperature and by withholding water. They should be watered about 12 hours before being transplanted. Keep as much soil around the roots as possible when transplanting them. Set the plants out in the garden slightly deeper than they grew in pots or coldframes. Press soil firmly about the roots. In warm weather shade the plants with a covering such as newspapers for 2 or 3 days after transplanting.

under completely unless they are diseased vegetable materials which should be removed and burned.

For fall and winter garden preparation, leave the surface rough. A rough surface holds water better and makes spring preparation easier.

As spring gardening time approaches, the roughly plowed garden should be pulverized several times well in advance of planting. Rows should be prepared to suit the locality and the type of vegetables to be planted. For most vegetables 18. to 36-inch rows are adequate. Cucumbers, squash and others of that type growth require more space.

In general, flat culture requires less work and is better than growing the crops on raised beds or ridges.

Ridges, however, are advisable on poorly drained areas, where heavy rainfall occurs, or where the furrow type of irrigation is used.

Soils should not be worked when too wet. This results in poor condition of the land and, in general, a poor garden.

Using Commercial Fertilizers

Commercial fertilizers are good for vegetable production in light sandy or sandy loam soils. Generally a combination barnyard and commercial fertilizer is better than either alone. On small plots used intensively, commercial fertilizers may be broadcast and thoroughly harrowed or raked into the upper 3 or 4 inches of soil. When fertilizer is used in drills beneath the rows, it should be placed about 2 inches to one side and slightly below where the seeds are to be planted. Apply 3 to 6 pounds per 100 feet of row and mix it thoroughly with the soil a week or 10 days before planting. Often gardeners use fertilizer too freely. For most sections of the State complete fertilizers such as 6-12-6 or 8-8-8 are considered best for vegetable production.

Nitrate of soda, ammonium nitrate or sulfate of ammonia may be used in moderate amounts as a sidedressing for most vegetable crops during the growing season. Usually 1 to 2 pounds per 100 feet of row is sufficient. In sidedressing, place the fertilizer well away from the base of the plants out in the feeder root area. Work it well into the soil, and water thoroughly.

For stimulating quick growth of tomato or other transplanted plants, commercial fertilizers often can be used to advantage by dissolving 1 pound of 6-12-6, for example, in 5 gallons of water. Place about a pint of this "starter solution" around each plant. It will take about 5 to 10 gallons for 100 feet of row.

Making and Using Compost

Compost is made by piling soil, manure, crop residue, lawn clippings or similar materials in alternate layers, usually with a flat top and vertical sides so that the organic matter will rot down without leaching. Layers of soil 2 to 3 inches thick should alternate with layers of organic materials twice as thick. If the manure is not high in nitrate, a few handfuls of a complete commercial fertilizer high in nitrogen should be used with each layer to hasten decay. The compost pile should be kept moist.

Every 3 to 4 months the compost heap should be stirred completely or turned. About 12 months usually is sufficient time to make excellent compost.



Beets are a hardy vegetable and one of the easiest to grow. Well-prepared soil helps to insure uniformity in shape and size.

Compost materials vary greatly in chemical and physical properties, depending upon the materials used, the degree of decomposition and the mixing. Compost is not a satisfactory garden fertilizer alone. Its greatest values are in improving the physical condition of the soil, growing seedlings for transplanting and for mulching.

If compost is well rotted, it may be applied and mixed with the soil a few weeks prior to planting. If it is poorly decomposed, fall application to the spring garden plot is a good practice. The amount to use per given unit depends on the condition of the soil, what is to be grown and other factors, but the gardener is not likely to use too much.

Using Barnyard Manures

Barnyard manure should be used extensively on vegetable gardens. It should be plowed or spaded well into the soil, and used as a heavy topdressing when fitting the land for planting.

If the manure is not well composed, it should be applied broadcast over the garden in the late fall or winter, several weeks before planting time. Apply a 1- to 2-inch layer (6 to 10 tons per acre, or 1 bushel per 25 square feet) and then break the ground so that the strawy material will decompose and not be in the way during seeding.

Supplement the manure with phosphorus. Add 100 pounds of superphosphate to each ton of horse or cow manure. Double this amount per ton for sheep or poultry manure. Be cautious when using poultry or sheep manures, since they contain more nitrogen than other manures and may burn the plants.

Testing Garden Soils

A soil test will help both the experienced and beginning gardener to know exactly what his soil needs in plant nutrients to produce high yields of good-quality vegetables. A soil test will determine whether the soil is acid or basic, and how much organic matter, nitrogen, phosphorus and potassium is present. Soil samples may be sent to the Soil Testing Laboratory, College Station, Texas, for a complete soil test. Instructions for taking soil samples and information about the fee may be obtained from local county extension agents.

Most vegetable plants grow better in a slightly acid soil. Adding lime to soils not only reduces acidity, but in general, improves the physical structure of certain heavy clay soils.

Where lime is applied, it should be spread after plowing and forked, spaded or harrowed into the top 3 to 6 inches of soil. Lime should not be applied along with commercial fertilizers or manure, since it may keep the plants from receiving some of the plant food nutrients otherwise available.

In many areas of Texas, the soils are alkaline or high in lime. A reduction of the soil alkalinity is desirable for best growth and production of many vegetables. Alkalinity of soils may be reduced temporarily, or an acid condition created, by the use of aluminum sulfate, sulfur, barnyard fertilizer, compost or commercial fertilizers which are acid in reaction. Correction of lime soils to some extent may occur with the application of 1 pound of aluminum sulfate per square yard. Heavy applications of barnyard fertilizer are helpful in lime soil.

PLANTING THE VEGETABLES

Time of Planting

One of the most important factors in growing vegetables successfully is timing the planting or transplanting of each vegetable so that it has all of the advantages of local conditions. Factors, such as rainfall, altitude, temperature variations and length of growing season vary greatly over Texas; therefore, only general information is given herein.

The following table is a general guide as to when various kinds of vegetables should be planted under most Texas conditions. By determining the average dates of the last frost in the spring and the first fall frost in a given locality, approximate planting dates may be estimated by the use of this table:

How to Plant

Assume that the site has been selected, the garden planned and the necessary equipment obtained; also that the garden soil has been prepared and fertilized before planting is started.

The old "thumb" rule of planting seeds to a depth twice their diameter has many exceptions. In light soil, seeds should be planted deeper than in heavier ones. Fall-sown seed not only should be planted deeper, but 20 to 25 percent more seed should be used for a given area than for spring planting.

Some seed are so small that proper planting is difficult. Mixing coarse sand or similar material with the seed helps to avoid sowing them too thickly.

Early spring plantings		Spring or early summer plantings		Late summer or early fall plantings
4 to 6 weeks before frost-free date	2 to 6 weeks before frost-free date	Frost-free date	2 to 6 weeks after frost-free date	6 to 8 weeks before fall freeze
Asparagus	Beets	Beans, snap	Beans	Beans, snap
Broccoli	Carrots	Cantaloupes	Corn, sweet	Beets
Cabbage plants	Chard	Corn, sweet	Cucumbers	Broccoli
English peas	English peas	Cucumbers	Eggplant	Cauliflower
Lettuce	Lettuce	Okra	Okra	Carrots
Onions	Mustard	Pepper plants	Pepper plants	Mustard
Potatoes	Parsley	Squash	Southern peas	Radishes
Turnips	Radishes	Tomatoes	Sweet potatoes	Spinach
		Watermelons		Onions

Plant the seed in a moist (not wet), well-conditioned row and cover immediately. Firm the soil well. Mulching on top of the planted row is desirable, especially in dry areas or in hot, dry weather in all areas. Mulching is discussed in more detail on page 10.

To obtain straight rows in the garden and to conserve space, stretch a string tightly along the line of the row. Planting seed by hand is practical and satisfactory in a small garden if the work is done carefully and if a small hoe is used to open the furrows. Quick-maturing vegetables such as radishes, beets, lettuce and mustard may be followed by planting later maturing crops.

The table on pages 8 and 9 gives pertinent information on planting, adapted varieties, hardiness and other phases. The use of adapted varieties is extremely important and can mean the difference between success and failure in the garden undertaking.

Gardens should be kept on the job as much of the year as possible. There is no place in Texas where some vegetables cannot be grown. Make successive plantings for a continuous supply of fresh, crisp, nutritious vegetables. Plant so that none will go to waste.

Seed Treatment

Seed treatment has for its chief purpose: (1) to control diseases borne on the seedcoat; (2) to aid germination of seed under adverse weather conditions. Though the need for seed treatment is universal, the necessity is greatest where rainfall is heavy, humidity and temperatures high and disease outbreaks common.

The most effective disease control program is *prevention*. Seed treatment is only one of several ways of preventing disease. Keeping garden sites clean of diseased crop residue, practicing site rotation, using good seed, growing resistant varieties and keeping the plants in excellent growing condition have a tremendous influence in minimizing disease damages.

For most nonlegume seeds, commercial organic mercury compounds are effective. For the average size garden a few small packages are sufficient. Exercise care in using the material. Follow directions and observe the precautions given on the container.

Seed Inoculation

Inoculating legume vegetable seeds, such as beans and peas, is done to place nitrogen-gathering bacteria in the soil. These bacteria take nitrogen out of the air and place it in the soil for plant use. This is a practice peculiar to legumes. Response to this inoculation process varies but its use is always good insurance.

Small, inexpensive packages of the material may be purchased from most seed or drug stores. For the average gardener, one package is sufficient for all legume plantings during the season. Do not allow the inoculating material to be exposed to sunlight longer than necessary. Light destroys the bacteria and the value of the inoculant. Directions on the container should be followed for maximum response.

Remember, both inoculating dust and mercury compounds cannot be used on the same seed. The two treatments should not be confused. Spergon is an exception and may be used to disinfect seed that have been inoculated.

CARE OF VEGETABLES

General Garden Pointers

Regardless of care and judgment used in selecting a site, soil preparation, fertilization and adapted varieties, little return can be expected if the garden vegetables are not cared for properly.

Later paragraphs give some of the major points on care. Here are a few of the minor, though important, practices which should be observed:

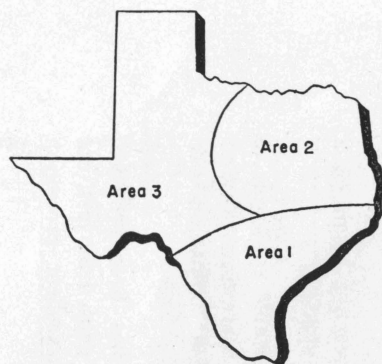
1. To keep fruiting vegetables in full production longer, do not permit fruits to remain on the plants after the normal harvesting time arrives. Clear the plants of matured fruits even though they are surplus.

2. Disease spread and damage is encouraged by going into the garden immediately after rains or when heavy dew is on the vegetables.

3. After young vegetables reach a height of 2 to 2½ inches, thin out to proper spacing.

4. When skips occur in vegetable rows due to poor germination or because of harvesting, plant or transplant the same vegetable or a companion crop in these spaces.

5. If the planting season has been crowded, watch out for frosty nights. Tin cans, fruit jars, hot caps or newspaper covers give excellent protection



Varieties and Planting Guide

Name of vegetable	Variety to plant	In these areas (See map.)	Seeds or plants per 100 feet of row	Rows apart (inches)	Plants apart in rows	Depth of planting	No. days ready for use	Hardiness
Asparagus	Mary Washington	1,2,3	60-80	24-36	15-20	8-10	2-3 years	Very hardy
Beans, snap, bush	Top Crop	1,2,3	1 pint	24-36	2-4	1-2	48-55	Tender
	Tendergreen	1,2						
	Pearl Green	1,2,3						
	Seminole (Fall)	1,2,3						
Beans, snap, pole	Bluelake	1,2,3	½ pint	24-36	4-6	1-2	55-65	Tender
	Kentucky Wonder	1,2,3						
Beans, lima, bush	Fordhook 242	1,2,3	½ pint	24-36	3-4	1-2	75	Tender
Beans, lima, pole	Florida Speckled	1,2	½ pint	24-36	4-6	1-2	80	Tender
Beets	Detroit Dark Red	1,2,3	1 oz.	24-36	2-3	1	60-65	Hardy
Broccoli	Early Green Sprouting	1,2,3	66	30-36	18	2-4	60-80	Hardy
	Texas 107	1,2,3						
Cabbage	Marion Market	1,2,3	75-100	30-36	12-18	2-3	70-75	Hardy
	Early Round Dutch	1,2,3						
	Golden Acre (Early)	1,2,3						
Carrots	Red Core Chantenay	1,2,3	1 oz.	24-36	2-3	½-¾	70-75	Hardy
	Danver's Half-Long	1,2,3						
Chard, Swiss	Lucullus	1,2,3	1 oz.	24-36	6-8	½-¾	50	Hardy
Collard	Louisiana Sweet	1,2	¼ oz.	30-36	12-18	½-¾	75	Hardy
	Georgia	1,2						
Corn, sweet	Aristogold Bantam, Evergreen	1,2,3	¼ pint	30-36	18-24	1½-2	80-90	Tender
	Calumet 57	1,2						
	Ioana	1,2						
Cucumbers, slicing	Stono (Disease resistant)	1,2,3	1 oz.	48	48-72	1	65-70	Tender
	A & C	1,2,3						
Cucumbers, pickling	Ohio MR 17	1,2,3	1 oz.	48	48-72	1	55-60	Tender
	Earliest of All	1,2,3						
Eggplant	Black Beauty	1,2,3	⅛ oz.	30-36	18-24	½	80-85	Tender

Lettuce, head	Great Lakes	1,2,3	1/2 oz.	24-36	4-6	1/2-3/4	80	Hardy
Lettuce, leaf	Grand Rapids Salad Bowl	1,2,3 1,2,3	1/2 oz.	24-36	4-6	1/2-3/4	40-45	Hardy
Muskmelon (cantaloupe)	Smith's Perfect Rio Gold	1,2,3 1,2,3	1 oz.	60-96	24-36	1-2	85-95	Tender
Mustard	Tendergreen (Early) Florida Broadleaf Giant Southern Curled	1,2,3 1,2,3 1,2,3	2 oz.	24-36	1	1/2-3/4	30-40	Hardy
Okra	Louisiana Green Velvet Clemson Spineless	1,2,3 1,2,3	1 oz.	30-36	24-36	1	55-60	Tender
Onions	Excel Crystal White Granex	1 1,2,3 1,2,3	400	24-36	3-4	1 1/2-2 1/2	80-95	Hardy
Parsley	Moss Curled	1,2,3	1/8 oz.	24-36	2-3	1/2-3/4	70	Hardy
Peas, Southern	Extra Early Blackeye Purple Hull 49 Cream 40 Cream 12	1,2,3 1,2,3 1,2 1,2	1 lb.	24-36	6-8	2-3	60-70	Tender
Peas, English	Laxton's Progress Little Marvel	1,2,3 2,3	2 lb.	24-36	3-4	3-4	60-65	Hardy
Pepper	Yolo Wonder Early Calwonder	1,2,3 1,2,3	50-75	36	12-24	2-3	70-80	Tender
Potato, Irish	Bliss Triumph Red Pontiac La Soda Sebago	1,2,3 1,2,3 1,2 1,2	5-8 lb.	30-36	12-15	3-5	75-100	Half hardy
Potato, sweet	Allgold Texas Porto Rico Red Velvet	1,2 1,2 2,3	50-75	36-42	12-18	3-5	120-150	Half hardy
Radish	Scarlet Globe White Icicle	1,2,3 1,2,3	1 oz.	24-36	1/2-1	1/2-3/4	20-30	Hardy
Spinach	Bloomsdale Savoy	1,2,3	1 oz.	24-36	3-5	1/2-3/4	40	Hardy
Squash, summer	Early Prolific Straightneck White Bush Scallop	1,2,3 1,2,3	1/2 oz.	36-48	36	1-2	50	Tender
Squash, winter	Acorn	1,2,3	1/2 oz.	60-72	36	1-2	85-90	Tender
Tomatoes	Texto 2 Pritchard Homestead Porter (Summer) Summer Prolific (Summer)	1,2,3 1,2 1,2,3 1,2,3 2,3	35-50	48	30-36	2-4	60-85	Very tender
Turnips	Purple Top Shogoin (Greens)	1,2,3 1,2,3	1/2 oz.	24-36	3-5	1/2-3/4	35-55	Hardy
Watermelon	Charleston Gray Pride O'Texas Tendersweet Sugar Baby	1,2,3 1,2,3 1,2,3 1,2,3	1/2 oz.	84-96	36-48	1-2	85-95	Tender

from frost. If frost arrives, protect plants from the sun for a few hours the next morning, if possible, and thoroughly spray the plants with water. This will tend to reduce frost damage.

6. If fruiting vegetables grow luxuriantly with little fruiting, this indicates an excess of nitrogen. Try sidedressing with 3 to 4 pounds of superphosphate per 100 feet of row to balance the plant nutrients.

7. Old spring plants of tomatoes, eggplants, okra and peppers, if fertilized, worked, mulched and watered, yield excellent fall crops.

8. When yellowing or chlorosis of vegetables occurs in the high lime sections of the State, mix 1 pound of iron sulphate in 5 gallons of water or in 10 pounds of barnyard manure. Use this mixture on 20 to 30 feet of row space, several inches from the plant. Mix well into the soil.

9. If there is a good supply of water and the soil is fertile, try planting companion crops. Combinations such as radishes with beets or carrots, corn with squash, pumpkins, or beans and lettuce with early cabbage should do well.

Proper Cultivation

Thorough, systematic cultivation is necessary to produce an abundance of high quality vegetables. To maintain good physical condition of the soil, cultivate at weekly intervals. This also helps to provide proper soil aeration, save soil moisture, furnish a loose area which can be penetrated easily by the roots and keep down weeds and grasses. On farms where sites are

Pruning tomato vines usually results in earlier and larger fruit. In the pruning operation, the shoots or suckers that grow from the axils of the leaves are broken off as shown in the picture or they may be removed by cutting with a sharp knife.



large enough, the garden rows should be far enough apart to allow cultivation with power equipment.

Cultivation after planting should be shallow and should take place as soon after each rain or irrigation as the soil permits. Do not cultivate when the soil is too wet.

There are no set rules for cultivating a garden. The type of soil, weather, kind of vegetable and other conditions influence the kind and amount of cultivation necessary. The individual gardener must take many of these influencing factors into account and cope with them. Regular, shallow cultivation on through the harvesting season is a good practice.

Mulching the Garden

In nonirrigated localities, which have frequent periods of insufficient moisture and high temperature, a 2-inch mulch of straw, hay, dried lawn clippings, cotton burs, leaves or similar materials applied over the surface of the ground help to conserve moisture, hold down weeds and grasses and reduce the soil temperature near the surface. Before mulching, all growing weeds and grasses should be removed and the soil thoroughly conditioned for best plant growth.

Mulching tomatoes, beans, cucumbers and squash keeps the fruit from direct contact with the soil.

After mulch materials have served their purpose, turn them under for organic matter several weeks before further planting. To aid and speed up decomposition, commercial fertilizer high in nitrogen should be broadcast on the mulch just prior to turning.

Watering the Garden

In most localities, the vegetable garden does best with a moisture supply equivalent to about an inch of rain per week during the main growing season. This means about 28,000 gallons of water per acre or 900 gallons on a 30 x 50 foot garden weekly.

Thorough watering of the soil to a depth of 4 to 6 inches weekly is preferable to more frequent light waterings, which encourage shallow rooting. Shallow roots are poor feeders, damage more readily from high winds and suffer more severely in hot weather.

In preparing the garden plot, plan for an adequate water supply, and run the garden rows and irrigation furrows properly for watering.

Water in early morning, applying the water gently to the soil, not on the plants.

INFORMATION ON SPECIFIC VEGETABLES

No attempt is made here to discuss points such as preservation and commercial phases of production and marketing, since this bulletin is confined largely to home production.

ASPARAGUS is easy to grow and care for; yet few home gardeners ever attempt it. In late fall or early spring, place the 1-year-old roots 15 to 24 inches apart in rows that are 3 feet apart. The roots are put in a trench 1 foot deep and as the plants begin to grow, soil is pulled around the young shoots until the furrow is completely leveled off.

Asparagus needs lots of plant food which can be furnished by plowing manure into the furrows, and by a heavy application (2 to 4 pounds per 25 row feet) of a 6-12-6 fertilizer. Repeat these applications every year.

Shoots should not be cut at all during the first growing season and for only 3 or 4 weeks the second year. In the third season, they may be cut for a period of 10 weeks or more. Cut shoots just below the surface of the ground, cutting off all the shoots every day or every other day during the harvest season to force out new ones. At the end of the season the tops should not be cut off until they have died in the fall; then all tops should be cut and disced under, using them as green manure.

Six to ten crowns per member of the family is considered adequate. The easiest and most satisfactory way to start asparagus is to buy crowns from a reliable nursery.

BEANS are a warm-season crop and should be planted only in the spring after danger of frost is past. Several days may be gained by soaking the beans overnight before planting. Make repeat plantings every 2 to 3 weeks during the spring and early summer to insure a continuous supply of fresh beans. Do not cultivate deeply because beans are shallow rooted.

BEETS thrive in cool weather and can be planted in the early spring. The so-called beet seed actually are fruits containing several seed. These fruits may be rolled to help separate the seed. The seed should be soaked before planting to hasten germination.

To obtain uniformly shaped beets thin the young plants to stand 2 to 4 inches apart in the row. The young plants removed in thinning may be transplanted to the skips in the row or the tops may be used as greens. Repeat plantings can be made to lengthen

the period of harvest. Beets can be used in the fall garden.

CABBAGE may be produced in the home garden several months of the year. This crop likes a cool growing season, but it will stand some hot weather and grows on almost any type of soil. Plenty of barnyard manure will make a good cabbage crop.

Cabbage seed are planted in the hotbed 4 to 6 weeks before the plants are needed. Seed should be treated with organic mercury material before planting. They are planted in rows 4 inches apart with four to six seed per inch in the row. Seedlings are given their first transplanting when the second pair of leaves appears. At this time set them 2 inches apart to await transplanting to the garden when all danger of a hard freeze is over.

CARROTS require little attention once they are above ground. Soil in the seedbed should be very fine to allow the small plants to push through. Since carrots withstand light frost and freezes, they may be planted early.

To grow long, smooth carrots, the soil should be broken 8 to 10 inches deep before planting. Since carrot seed often germinate poorly, they may be soaked overnight before planting.

Carrots require a fairly long time to germinate. Planting radish seed along with carrot seed will help to mark the row and also aid in breaking the surface of the soil, thereby making it easier for the carrot seedlings to come up. Seed should always be treated

Southern peas are widely grown in Texas. They are dependable in production even in the summer months and may be utilized fresh, frozen, canned or even dried.



before planting. Where space is scarce, carrots may be grown in a frame garden.

COLLARDS withstand more heat and cold than cabbage and cultivation is the same as for cabbage. They do well even in poor soil.

Collards are grown most commonly as a fall crop for a supply of winter greens. Collard seed should be treated properly before planting.

CORN, SWEET requires considerable space and should be grown only in large gardens. Corn soon passes the edible stage and successive plantings should be made every 2 to 4 weeks. Late plantings may be made following early crops, such as potatoes, beets and lettuce. Seed should be treated before planting.

CUCUMBERS should be grown only in large gardens since they require a great deal of space. To conserve space, the garden fence may be utilized as a trellis for growing cucumbers. They should be planted only after frost danger is past. Frequent harvesting lengthens the time the plants bear.

KALE is a hardy plant that provides winter greens in many areas. It may be harvested by cutting the entire plant or by removing only the outer leaves while they are young. Treat seed before planting.

LETTUCE is a familiar crop to every gardener; yet it is surprising how few grow good lettuce. It needs cool weather, fertile soil and plenty of moisture. Of the two distinct types, the leaf kind is easier to grow, but most gardeners prize more highly a good crop of head lettuce. Seed may be sown where the crop is to mature, or it may be planted in a seedbed and transplanted. In either case the soil should be in a fine mellow condition. If planted first in a seedbed, transplanting should be made when the first four leaves are halfgrown. Land to be planted in lettuce should receive a heavy application of manure or 6-12-6 commercial fertilizer.

Since this is a cool-season crop and light frosts do not damage it, lettuce should be planted either in late fall or early spring.

Leaf lettuce does well in a frame garden. Seed should be treated with either red copper oxide or zinc oxide. Repeat plantings of leaf lettuce at intervals of 2 to 4 weeks for a continuous supply.

MUSTARD is grown in much the same way as spinach. It is a cool-weather crop which should not be attempted after the temperature gets very warm.

Repeat plantings at intervals of 2 to 3 weeks during early spring for a continuous supply of greens.

Mustard may be grown to a limited extent in frame gardens. Treat seed with organic mercury material before planting.

OKRA does best in hot weather. The seed should not be sown until all danger of frost has passed and the ground is warm.

For best quality okra, pods should be harvested within 2 or 3 days after the blooms fall. Never allow the pods to remain on the plant until they reach maturity because this reduces the yield. Seed saving is easy and practical.

ONION sets usually are planted as early as possible in spring for growing early bunch onions. Where winters are not severe, sets may be planted at any time during the winter. They should be spaced 2 or 3 inches apart in rows 20 inches apart.

Dry onion seed are sown as soon as hard frosts are over, in rows far enough apart to allow cultivation. The plants are thinned so that they are 4 inches apart in the rows.

Bermuda onions are transplanted to the field from protected hotbeds. Since onion seed germinate slowly, hotbed seed should be sown at least 8 weeks before plants are needed.

A row of shallot onions should be in every garden. The planting may be made from seed or from plants.

A row or two of sweet Spanish onions in the frame garden will provide a fresh supply during dry, hot seasons in certain areas.

PARSLEY planted in a row a few feet long in the main or frame garden will furnish enough for garnishing purposes, but sometimes more is desired for use in soups and stews. Parsley is hardy to cold but sensitive to heat, and thrives under the same conditions suitable for kale. Soaking the seed overnight as well as treating with organic mercury material is advisable.

PEAS, SOUTHERN are heat tolerant and may be used for summer production. Southern peas should be planted at 3- or 4-week intervals for a fresh supply over the season.

PEAS, ENGLISH are a cool-season crop and should be planted as early as possible in the spring. This crop is subject to severe damage from powdery mildew and aphids if planted so late that it matures in hot weather. To furnish support for the vines, brush or small limbs may be placed between the rows.

PEPPERS stand a good deal of heat and are grown similarly to eggplants. Plants should be started under cover 4 to 6 weeks before field planting time. Seed should be treated with organic mercury compound before going into the hotbed.

Anaheim is a popular hot variety. A few hot pepper plants in the open or frame garden should supply the family's needs.

POTATOES, IRISH may be planted as a spring or fall crop. Spring plantings usually are more prolific and more profitable because favorable weather conditions exist in Texas during the spring months. The seedbed for Irish potatoes must be deep and thoroughly prepared. Certified seed, having been subjected to rigid inspection, help to insure good yields and repay the grower for the small additional cost. Large seed pieces ranging from 1½ to 2 ounces are desirable because they produce stronger plants. Irish potatoes are not a poor soil crop. This plant must have an abundance of plant food for heavy yields. Well-rotted manure, supplemented with superphosphate and muriate of potash applied at the rate of 4 to 10 tons per acre is satisfactory. A 6-12-6 commercial mixture, used at the rate of 500-1,000 pounds per acre and applied 2 weeks before planting is good.

Treat the seed thoroughly before planting. Saving seed for spring planting has not proved satisfactory.

POTATOES, SWEET are a warm-weather crop requiring a rather long growing season. They should be grown only in larger gardens. Only state certified slips should be used. Slips should be planted on medium-height beds and given shallow cultivation three to five times. For the main potato-growing areas, the use of 600 to 800 pounds of a 6-12-6 commercial fertilizer has proved best. The fertilizer is applied in the drill 10 days to 2 weeks before setting the plants. Sidedressing generally is not recommended.

Sweet potatoes should always be treated before bedding. Potatoes to be used for slip production should have deep salmon-colored flesh; they should be as large as U. S. No. 1 and perfectly sound.

RADISHES are a quick-maturing crop and must be grown rapidly if they are to be of high quality. Sow seed 2 to 3 weeks before frost-free date. The globe type matures sooner than the long type. Scarlet Globe is a favorable globe-type variety while White Icicle is a mild long-type variety preferred by some.

Small plantings should be made at 2- to 3-week intervals for a long, continuous supply. Seed treatment is of doubtful value. A supply may be grown in the frame garden.

SPINACH is one of Texas' most important greens and is grown in practically all sections of the State. Seed may be broadcast in beds or drilled in rows, the latter often preferred in the home gardens.

Spinach is a cool-weather plant that does poorly in hot weather. It should be grown in late fall, winter and early spring. A light freeze does not seriously injure the crop. It needs a great deal of nitrogen which may be obtained by spreading manure the previous season or applying nitrogenous fertilizer two or three times during the growing season.

Since spinach will run to seed, small plantings should be made repeatedly, rather than one big planting.

SQUASH, BUSH or *SUMMER* may be grown to advantage in small gardens, but the trailing types should be grown only in large gardens. General care, soils and other factors for best growth are about the same as for cucumbers.

TOMATO seed should be sown in a hotbed or in a shallow box 8 to 10 weeks before transplanting to the garden to get an early crop. When the first pair of true leaves appears, the plants may be transplanted about 4 inches apart each way. They may be transplanted into pots or paper cups until ready for the garden.

Do not set the tomato plants in the garden until immediate danger of frost is over. Plant in rows 3 feet apart with the plants 3 feet apart in the rows. Pruning the tomato vines usually results in earlier fruit that is larger in size; however, the total yield generally is reduced. Pruning is not recommended for west and northwest Texas nor for summer tomatoes. If the plants are to be pruned, a 4-foot stake should be driven into the ground next to each plant and the vine tied to the stake. All suckers at the base of side limbs should be removed, allowing only one stem to grow.

TURNIPS are grown for roots and tops. Both may be secured from the same planting if the crop is handled properly. This is another cool-weather crop. Turnips may be broadcast, but they thrive better when drilled thickly in rows. When the tops are large enough for greens, the plants should be thinned.

Seed treatment is of doubtful value.

INSECT AND DISEASE CONTROL

Garden insects usually are easy to keep in check if control measures are used while the insects are young and before they build up in large numbers.

Regular applications of an all-purpose garden insecticide dust every 7 to 10 days is suggested. A regular program of insect control will keep the insects



Aphids or plant lice attack many of the vegetable crops grown in Texas home gardens. They are found on the underside of the leaves. The insecticide must be applied thoroughly to cover the lower surface of the leaves if control measures are to be effective.

to a minimum and prevent serious damage to the plants. A number of these all-purpose dusts are available to the gardener. All contain a combination of insecticides that will control both chewing and sucking insects.

The important things to consider when selecting a garden dust are:

1. The insecticide should have a short residual effect so the vegetables can be used regularly from the garden without danger to the family.
2. Sulfur should not be included in the all-purpose dust because of possible damage to tender crops such as cucurbits (squash, cucumbers, cantaloupes and watermelons).
3. It should be economical in price.

Plant diseases in gardens usually are prevented rather than cured. Outstanding among practical disease control measures is the growing of disease-resistant varieties. In old gardens, wilt and foliage diseases take a heavy toll of tomatoes, beans and vine crops.

Rotation with nonsusceptible crops helps to reduce disease. Vine crops should not follow vine crops on the same land. Root crops such as beets and carrots may follow vine crops. Leafy crops such as lettuce, mustard and cabbage along with corn or other vegetables can be arranged in the planting so that the same vegetables do not go back in the same part of the garden more often than once in 3 or 4 years.

Seed treatment for controlling diseases such as scab on Irish potatoes, black rot and stem rot on sweet potatoes and other seedborne diseases is an effective method of disease prevention.

Good soil hygiene is best exercised by removing diseased plants as they appear in the planting. Again as each vegetable reaches maturity, the plants should be removed and the soil plowed to eliminate as much diseased plant growth from the soil as possible.



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